

4.2.5 Bending and Welding/Coating and Inspection

A mechanical pipe-bending machine bends individual joints of pipe to the angle needed to accommodate changes in the natural ground contour or pipeline alignment as shown in Figure 4.2.5-1. In certain areas where field bending is not practicable, prefabricated fittings will be used.



Figure 4.2.5-1 Field Bending

After pipes are strung and bent, the pipe sections will be welded together and placed on temporary supports next to the trench. Figure 4.2.5-2 below shows a “welding shack” being lowered onto the pipe. These shacks contain automated welding machinery, which performs the welds. Some manual welds will also need to be made in areas where conditions are not conducive to the automated process.



Figure 4.2.5-2 Welding Shacks

Although federal regulations require only 10 percent of the welds to be inspected, Enbridge will field-inspect 100 percent of the welds and will apply coating at welded joints as shown in Figure 4.2.5-3.



Figure 4.2.5-3 Field Inspection

4.2.6 Trenching and Lowering of the Pipeline

Construction personnel will use backhoes and/or ditching machines to excavate a trench that is approximately 6 feet deep. To the extent practicable, trench walls will be vertical. The trench will typically be 10-12 feet wide at the top. In unstable and saturated soils, the trench could be wider. The pipe will then be lowered into the trench using side-boom tractors as shown in Figure 4.2.6-1.

At this point, construction survey crews will use precision global positioning system (GPS) equipment to mark the final position of the pipeline before be backfilled. This step will ensure adequate depth of cover has been achieved and that the pipeline is located properly within the easement.



Figure 4.2.6-1 Lowering of the Pipeline

To the extent that there is water in the trench, trench dewatering may include use of a dewatering structure such as a straw bale dewatering structure with a geotextile filter bag to provide additional filtration near sensitive resource areas in accordance with Section 5.1 of Enbridge’s EPP (Appendix B) and applicable permits. Landowner approval is required in advance of placement of dewatering structures outside of the approved construction Right-of-Way. If water is discharged to a well-vegetated upland area, dewatering filter bags and controlled discharge rates will be used to minimize the potential for erosion and subsequent release of sediment into nearby surface water and wetlands as shown in Figure 4.2.6-2 (see also Figure 22C in EPP Appendix B) and Figure 4.2.6-3 (see also Figure 21 in EPP Appendix B). Fond du Lac Band must approve all dewatering including the location and type of dewatering structures.

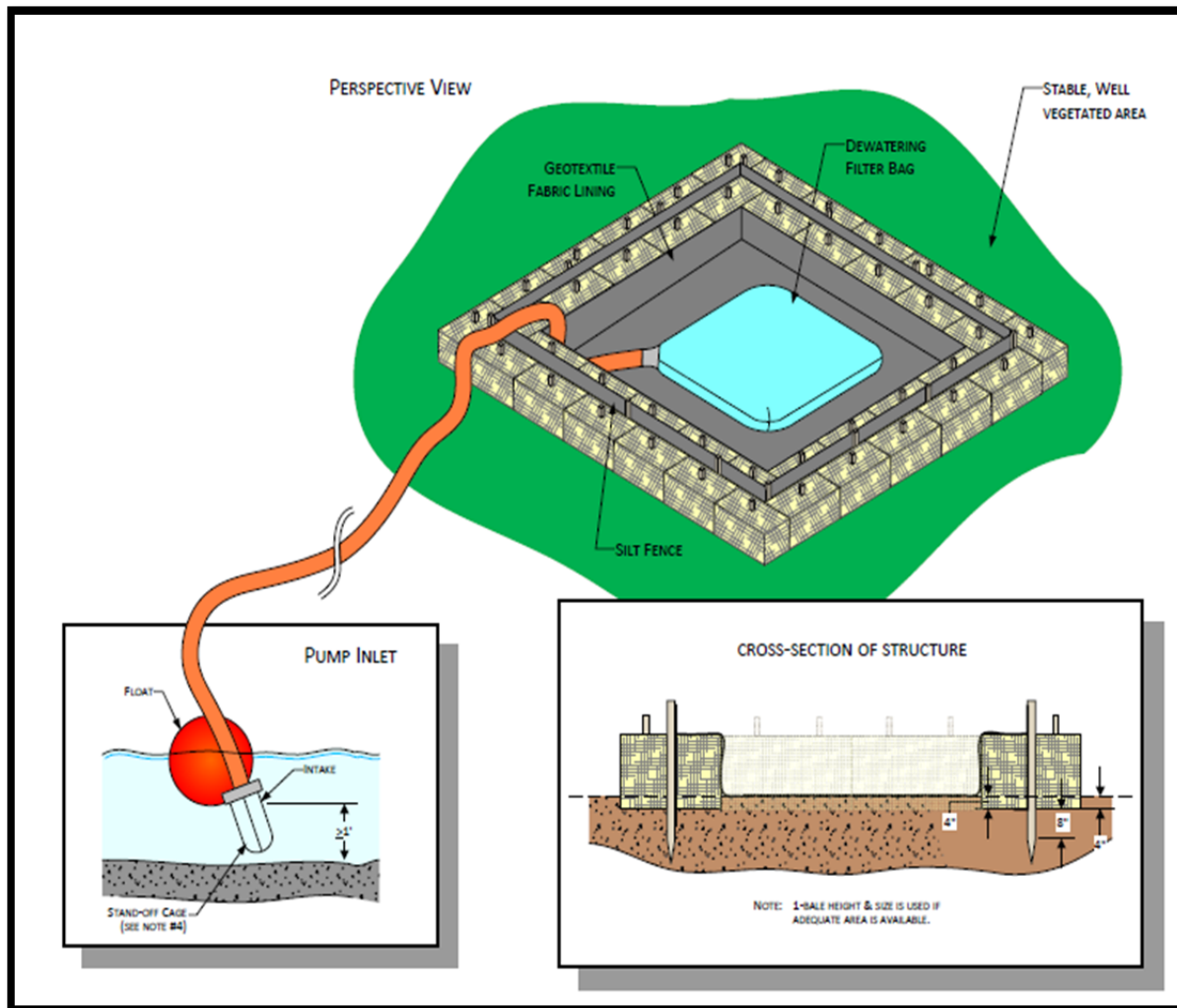


Figure 4.2.6-2 Straw Bale Dewatering Structure

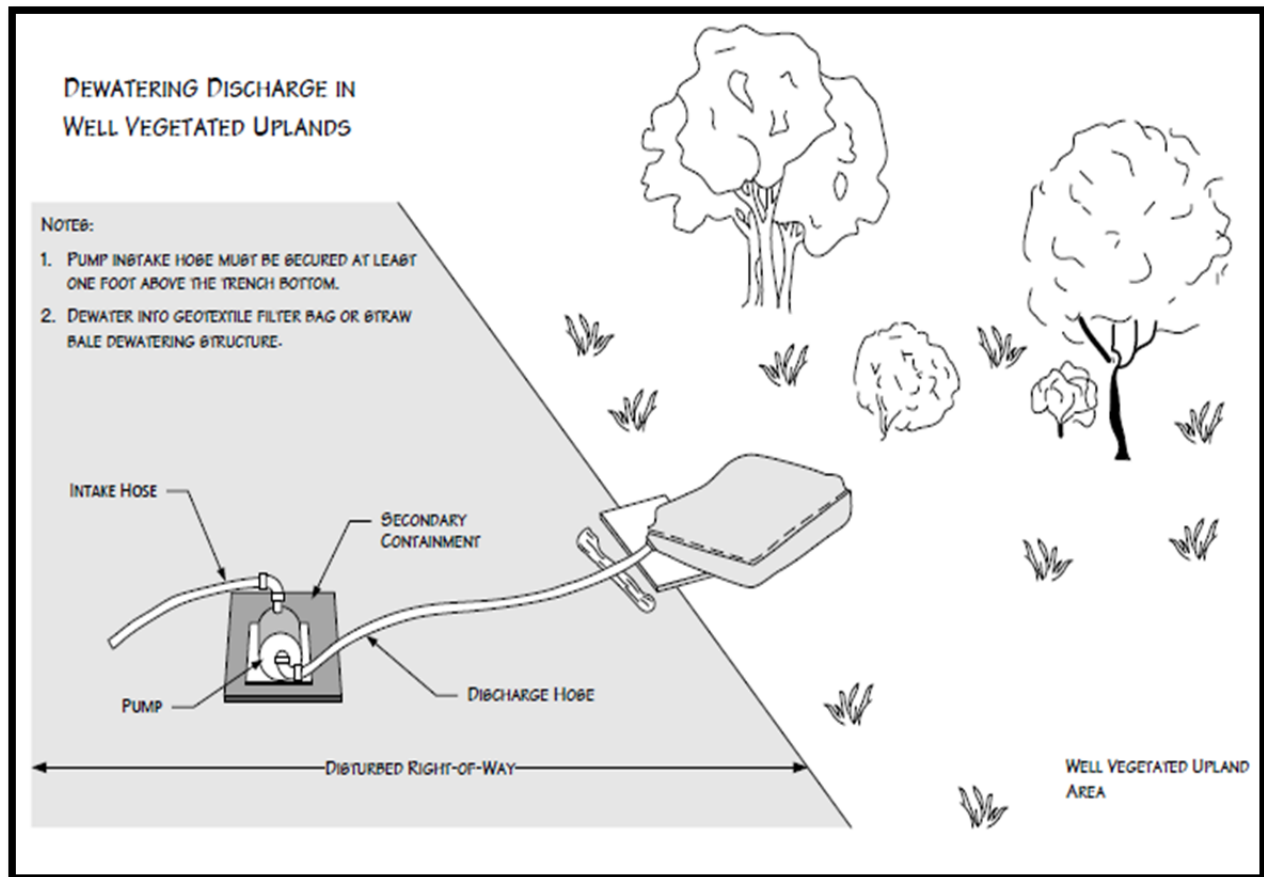


Figure 4.2.6-3 Typical Dewatering Measures

At waterbody crossings, crews will utilize one of the construction methods listed for installing pipe: open cut, flume (Figure 4.2.6-4, see also Figure 17 in EPP), or dam-and-pump. The method selected for a specific crossing will include erosion control, bank stabilization, and bank revegetation, and will minimize construction impacts on the waterbodies.